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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,413	02/20/2007	Herbert Friedrich Boerner	DE 030393	8163
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EXAMINER YANG, JAY				
ART UNIT		PAPER NUMBER		
1794				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/579,413

Applicant(s)

BOERNER ET AL.

Examiner

JACK YANG

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/CD)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____
- Paper No(s)/Mail Date ____

DETAILED ACTION

Claim Rejections – 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is dependent on itself. The Examiner will infer that Claim 7 reads instead: "A light-emitting device as claimed in *claim 6*, characterized..."

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

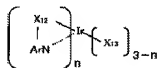
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuge et al. (JP 2003-007467 A) in view of Jarikov (US 2004/0076853 A1).

Tsuge et al. discloses an organic EL device comprising a light-emitting layer comprising a (light-emitting) host and dopant material between two electrodes ([Claim 1]). Tsuge et al. discloses that the anode is on a glass substrate ([0019]). Tsuge et al. discloses iridium complex dopants represented by the following formula:



([Claim 9], [Chemical formula 27]) where X_{12} = aromatic group, ArN = nitrogen-containing aromatic ring, $n = 1-3$, X_{13} = acac ([0063]). Tsuge et al. discloses possible dopant embodiments with benzoquinoline ligands:



([0052]) and



([0061]). However, Tsuge et al. does not explicitly disclose the use of dibenzoquinoline ligands.

Jarikov discloses the use of dibenzo[f, h]quinoline as useful host material in the light-emitting layer of an organic EL device ([0161]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the benzoquinoline ligand of the iridium dopant in the organic EL device as disclosed by Tsuge et al to produce IrL_3 or $\text{IrL}_2(\text{acac})$ where L = dibenzo[f,

h]quinoline. The motivation is provided by the fact that Tsuge et al. discloses the possibility of a wide variety of nitrogen-containing aromatics groups as ligands in the generalized formula shown above, in addition to the fact that dibenzo[f, h]quinolines are widely known in the art for use in organic EL devices as disclosed by Jarikov.

Moreover, a benzoquinoline to dibenzoquinoline modification is an obvious variation (involving a minor addition of a fused benzene ring to benzoquinoline) that will produce a dopant species with similar chemical and physical properties such that the modification would have been predictable with a reasonable expectation of success.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuge et al. (JP 2003-007467 A) in view of Jarikov (US 2004/0076853 A1) and Furugori et al. (US 2003/0141809 A1).

Tsuge et al. in view of Jarikov discloses the light-emitting device as claimed in Claim 6 as shown above. However, Tsuge et al. in view of Jarikov does not disclose that the further light-emitting material is a further iridium complex.

Furugori et al. discloses the use of plural metal complexes in the light-emitting layer with a metal = iridium ([0035]). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate further dopant iridium complexes to the light-emitting layer of the organic EL device as disclosed by Tsuge et al. in view of Jarikov. The motivation is provided by the fact that such further iridium dopants could allow further tuning of the light emission spectrum of the organic EL device that cannot be achieved if only a single iridium species is used as disclosed by Furugori et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACK YANG whose telephone number is (571)270-1137. The examiner can normally be reached on Monday to Thursday from 8:30 am to 6:00 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

/J. Y./
Examiner, Art Unit 1794